AMENDMENT TO THE CLAIMS

1 – 12. (Canceled)

13. (Currently Amended) The method of claim 31 [[7]] wherein the branch metric calculation is a square of a difference between a received signal sample and a desired target signal determined by a state transition.

14. (Currently Amended) The method of claim 31 [[7]] wherein the equalization target is pattern-dependent.

15. (Currently Amended) The method of claim 31 [[7]] wherein the branch metric calculation is based on a noise whitening principle when noise in the received signal is correlated.

16. (Currently Amended) The method of claim 31 [[7]] branch metric calculation is based on a covariance matrix of noise when noise in the received signal is correlated.

17 – 30. (Canceled)

31. (Previously Presented) A method of decoding data comprising:

tuning each equalizer of a bank of equalizers to a bit pattern, wherein tuning each equalizer includes selecting an equalizer from the bank of equalizers, sending known data to the selected equalizer, calculating a difference between an output signal from the selected equalizer and a target output signal, and tuning the selected equalizer to reduce the difference;

processing a segment of a received signal in a bank of equalizers, each equalizer tuned to a different bit pattern and an equalization target to produce an equalized output for each equalizer; and

detecting a bit sequence using a branch metric calculation to process the equalized output.

32. (Previously Presented) The method of claim 31 wherein the step of processing comprises:

dividing the segment of the received signal into finite overlapped segments, and

calculating an equalized output for each of the finite segments with the bank of equalizers.

33. (Previously Presented) The method of claim 31 wherein the equalized output is used in sequence detection according to the bit pattern associated with the equalizer for each equalizer of the bank of equalizers.

34. (Previously Presented) The method of claim 31 wherein a number of equalizers in the bank of equalizers is determined by a maximum number of possible states for a selected pattern window.